

# NEWSLINE

Published weekly for employees of Lawrence Livermore National Laboratory

Friday, December 14, 2001

Vol. 26, No. 49

## Holiday warmth



JULIE KORHUMMEL/NEWSLINE

Adan Ochoa, age 4, relaxes in a pile of toys donated by Lab employees in the annual Toys for Children drive. Adan attends the Council for the Spanish Speaking child development center, one of several organizations to benefit from this year's drive. More photos, page 5.

## Laser experiment links Lab to Mt. Diablo

By Don Johnston

NEWSLINE STAFF WRITER

Lab scientists and engineers will conduct communications experiments between Mount Diablo and the Laboratory to develop a wireless means of transmitting large quantities of data.

The experiments are being conducted as part of the Laboratory's Secure Air-optic Transport and Routing Network, or SATRN program. SATRN is an

NAI Laboratory Directed Research and Development strategic initiative, geared toward developing advanced technologies for long-range laser communications.

Proliferation detection, counterproliferation, arms control, counterterrorism and warfighting all require the timely and secure communication of information in situations where fiber-optic cable is

See **DIABLO**, page 8

## New possibilities unveiled in ocean storage of excess power plant emissions

By Anne M. Stark

NEWSLINE STAFF WRITER

Lab researchers have presented evidence that a new method for capturing carbon dioxide from power plants and placing it in the ocean has less impact on marine life than atmospheric carbon dioxide release or other global warming mitigation methods, such as direct injection and ocean fertilization.

LLNL earth scientists Greg Rau, Ken Caldeira and Kevin Knauss showcased the research, called carbonate dissolution, Wednesday at the 2001 fall meeting of the American Geophysical Union in San Francisco.

The proposal would hydrate the carbon dioxide in power plant flue gas with water to produce a carbonic acid solution. This solution would be mixed with limestone — which neutralizes the carbon dioxide by converting it to bicarbonate — and then would be released in the ocean. This process occurs naturally (carbonate weathering), but at a much slower pace.

"You are altering the chemistry of the carbon dioxide that causes a less drastic change to ocean pH (acidity) and is less biologically harmful than other methods such as direct injection ocean carbon sequestration and ocean fertilization," said Rau, an LLNL guest scientist who also works as a senior researcher with the Institute for Marine Sciences at UC Santa Cruz.

Whether carbon dioxide is released in the atmosphere or the ocean, eventually about 80 percent of the carbon dioxide will end up in the ocean in a form that will make the ocean more acidic. While the carbon dioxide is in the atmosphere, it could produce adverse climate change. When it enters the ocean, the acidification could be harmful to marine life.

"If the carbon dioxide were reacted with crushed limestone and seawater, and the resulting solution released to the ocean, the limestone would buffer the

See **CO<sub>2</sub>**, page 8

## Construction begun for new Isotope Sciences Facility

Construction on a new office building for the Chemistry and Materials Science Directorate (CMS) started the first week of December.

The construction contractor has installed new security fences as a part of preparations to allow contractor access to the construction site. A construction access lane will be created down Fourth Street between Bldg. 151 and the construction lay down area at Mesquite Way and Avenue A.

See **BUILDING**, page 7



The new two-story, 22,000-square-foot office building, to be numbered Bldg. 155, will be built in the lawn area immediately east of Bldg. 151. It will house 65 offices and a 150-seat auditorium, large enough for division-wide meetings.

## Committee starts the search for new CMS AD

In his State of the Lab talk last week, Director Bruce Tarter announced that Jeff Wadsworth, deputy director for Science and Technology, will chair the screening committee to seek and review candidates for the associate director for Chemistry and Materials Science.

Hal Graboske, the current CMS AD, announced his resignation last week. Graboske will remain AD until the search and selection for his

See **SEARCH**, page 8



Blanketed in thanks

— Page 2



SAFEly protect intellectual property

— Page 3



Strategic changes in Operations

— Page 3



## LAB COMMUNITY NEWS

### Weekly Calendar

Technical Meeting Calendar, page 7

Saturday  
**15**

There is a **scheduled power outage** from 7 a.m. Saturday to 3:30 p.m. Sunday in the following buildings: 230, 231 (partial power), 232, 233, 235, 239 and 243. Contact: Mark Cardoza, 3-0490.

Monday  
**17**

Representatives from **Health Net and PacifiCare of California** will give presentations on their medical plans in the Bldg. 123 auditorium. The Health Net representative will speak from 10 to 11:30 a.m. and the PacifiCare of California representative will speak from 1 to 2:30 p.m. Each representative will discuss the closure of the Pacific Health Care Medical Group and give an explanation of coverage for 2002 for their plan. Limited seating available. For more information, go to <http://www.llnl.gov/llnl/02employment/benefits/benefits.htm>.

...

Employees are invited to the **"LLNL/Sandia Old-Fashioned Christmas Celebration and Sing-Along"** at noon the Bldg. 543 auditorium. In addition to singing your favorite carols, a local youth handbell choir will perform. Refreshments will be served afterward. Contact: Bill Hart, 3-2460, or visit [http://www.ncal.verio.com/~hbriley/bsg/B SG\\_Carols.htm](http://www.ncal.verio.com/~hbriley/bsg/B SG_Carols.htm).

Tuesday  
**18**

Gifts for the annual **American Indian Activity Group toy/gift drive** are due. All donations will benefit foster children at the American Indian Child Resource Center in Oakland (<http://www.aicrc.org/>). Gifts for school students are in a greater demand this year; from age 5-17 years old. If you'd like to contribute a toy or gift, call Darlene Yazzie at 3-7846.

Wednesday  
**19**

The Eldercare Support Group, sponsored by Health Services, will have a networking at noon in the Visitors Center auditorium, trailer 6525, to discuss **"Taking Care of the Caregivers."** This will be a facilitated, informal discussion to share ideas with others on what has worked. Everyone is invited, whether or not you are presently caring for parents. Family members of Lab employees and contract workers are welcome to attend. Badges are not required. Reservations are not required. Contact: Marnette Yeager, 2-1217.

Thursday  
**20**

If you're looking for an interesting activity for your out-of-town guests over the holidays, the Public Affairs Office has openings in its monthly **community Lab tour** today from 10 a.m. to noon. All participants must be at least 18 years old and U.S. citizens. Badging is required and reservations are necessary. Contact: Kirsten Sprott, 4-4822.

### Campaign volunteers recognized



ELIZABETH CAMPOS RAJS/NEWSLINE



Mark Costella, chairman of this year's Cancer Awareness Campaign, was recognized recently for his volunteer efforts. At left, he was presented with a plaque by Manny Lateiner, deputy associate director for administration and operations in Safety, Security and Environmental Protection. At right, members of the campaign's organizing committee look over the quilt presented to Costella by Penny Pennington and committee members in appreciation.

### Go figure!



These students were among the more than 240 who participated in the third annual Go Figure Math Challenge, held at three sites in the Bay Area, including Sandia National Laboratories. Dona Crawford, AD for Computation, (back row, left) was among the judges for the event, which is sponsored by DOE. The math exams are given to the students on a Saturday (much like an SAT exam) and graded by LLNL and Sandia mathematicians. Top scorers were recognized at a banquet held last week in Pleasanton, at which Crawford and Steve Ashby were featured speakers.

### Lab gardeners to pick up Christmas trees next Friday

This year, the Lab gardeners will again pick up Christmas trees that were decorated for the holidays at LLNL facilities.

The trees will be chipped and used as a soil amendment around the site.

Hazard Control requests that holiday trees be removed from Lab facilities, by close of business, on Friday, Dec. 21, so that they do not dry out and become a fire hazard.

Trees for pick up need to be placed at the nearest street curbside by Dec. 21, close of business. Trees cannot be picked up from parking lots, pathways, alleys etc.

Discarded trees will be picked up on the morning of Dec. 26. Please, no ornaments or wrapping paper. Remove as much tinsel as possible.

With your help, the holiday tree pick up will reduce LLNL disposal costs, conserve resources, assist in meeting UC performance measure goals

regarding waste diversion, and provide usable end product for landscaping at LLNL.

Employees with questions, suggestions or ideas, regarding waste diversion at LLNL, are encouraged to call the Earth Hotline (E-ARTH or 3-2784).



### Newsline

Newsline is published weekly by the Internal Communications Department, Public Affairs Office, Lawrence Livermore National Laboratory (LLNL), for Laboratory employees and retirees.

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Web site: <http://www.llnl.gov/PAO/>

Printed on recycled paper

## NEWS OF NOTE



# Intellectual property theft could strike anytime, anywhere

By Jeffrey Morris

SAFE PROGRAM

"You are the first line of defense," said Robert Cleary, who recently spoke to a Laboratory audience as a guest of the Security Awareness For Employees (SAFE) Program.

Cleary, who spoke on "Protecting Intellectual Property, What Have You Got To Lose?" is the U.S. attorney for New Jersey. Cleary has spent the last 17 years prosecuting intellectual property, or IP, and other "white collar" crimes. He is currently prosecuting a case in which the alleged theft of intellectual property led to a 91 percent reduction in the stock value, the loss of an estimated 30,000 jobs, and a devastating reduction in employee retirement savings at Lucent Technologies, located near Newark, N.J.

In that case, two foreign nationals working on business visas in high-level technical positions at Lucent and a third person, a naturalized U.S. citizen, were charged with conspiring to steal source code and software associated with Lucent's PathStar Access Server. PathStar facilitates low-cost voice and data services over the Internet.

According to the criminal complaint filed in U.S. district court this spring, the defendants and the company involved planned to go public in a joint venture through initial public offerings of stock in the United States and in the foreign country to which the technology was allegedly transferred.

E-mails presented as evidence indicated that the intent of the alleged theft and illegal transfer of proprietary, unpublished intellectual Lucent property, was to create a server identical to that company's PathStar Access Server.

At this point, the charge is an accusation. The defendants are presumed innocent unless and until proven guilty beyond a reasonable doubt.

Nevertheless, Lucent's loss of intellectual property occurred and has been devastating to the company. Lucent stock fell 91 percent, job cuts planned for 2001 reportedly numbered 30,000, and employees have seen the balances of their stock-based retirement plans dwindle.

Because the Lucent case is currently in litigation, Cleary could say little about it.

Cleary did point out that the theft of intel-



## Security Awareness For Employees

lectual property is an increasingly serious problem. He told why it is important for employees at every level to be aware of the value of IP, and pointed out some ways to protect it.

"Intellectual property piracy has become a growing national and international crime problem," he said. "Approximately 5 percent of our gross national product is held in the form of intellectual property. That's in the hundreds of billions of dollars."

Cleary cited a computer crimes survey that stated that in the year 2000 alone, 186 companies lost a total of \$151 million to the theft of proprietary information. "That comes out to almost a million dollars per company, per year," he said.

"So intellectual property is certainly just as valuable as tangible assets and in many ways, particularly in a facility such as this, more valuable."

He gave an example of the hypothetical theft of a dozen laptop computers, pointing out that the value of the laptops could be negligible compared to the loss of key information.

"If a single computer file from one of the laptops was misappropriated, and that file contained some of the cutting-edge secrets you're working on...there could be serious national security implications.

"Information is frequently the most valuable asset that an organization has — and that is especially true in your line of work," Cleary said.

Even in organizations in which national security is not at risk, but trade secrets are, "all employees take it on the chin when there's IP theft," he said.

Such losses can result in deep reductions in

salaries, retirement plan values and, in the case of private companies, stocks and stock options.

"You can do a better job of prevention than the federal government can," he said, citing the problems he faces as a prosecutor of such cases.

He outlined several steps employees can take, including being aware of the value of intellectual property, adhering to physical and cyber security measures, and reporting suspicious activities (to your supervisor, to your security or computer security representative, or to the SAFE program).

One of the ways in which the federal government finds out about the theft of intellectual property is through employees reporting the outside contact, he emphasized.

Organizations can and should take steps as well. These steps include doing background checks, utilizing confidentiality and nondisclosure agreements, and limiting access only to those with a "need to know" the proprietary information.

"The essence of intellectual property crime," Cleary said, "is that the people involved cheat. They steal — to get an unfair economic advantage." He said the results are often felt beyond the company where the theft took place.

"The harm can go beyond profit when it's a foreign competitor who steals intellectual property."

With that in mind, Cleary emphasized another step that organizations can take. That is to work with their security organizations, law enforcement, and the federal government to punish those who steal intellectual property.

Intellectual property crimes can be prosecuted under the Economic Espionage Act of 1996, the "No electronic theft" Act or, possibly, trademark violation statutes, Cleary said.

He pointed out that he, as a federal prosecutor, has no interest in getting involved in civil suits involving intellectual property. "The fines are much higher when it's a federal offense," he said. "The fear of going to jail is a deterrent."

The appropriate place for people who steal intellectual property and, in doing so, harm U.S. companies and the country itself, Cleary said, is the federal penitentiaries.

Videotapes of Cleary's presentation will be available from SAFE; call 2-5557.

## Strategic Operations announces appointments, organizational changes

Deputy Director for Strategic Operations Mike Anastasio announced this week several organizational changes for his office, including two new assistant deputy directors, that are now in effect.

• With the retirements of the director and deputy director of the DoD Programs Office, that office and the National Security Office have been consolidated. The combined staff will be located in the current National Security Office complex in Bldg. 111.

The expanded National Security Office will continue its current functions in support of the Director's Office and the national security associate directors in the general national security arena. It will also continue to provide a focus and a coordination point for interaction with the DoD. The programmatic ADs will continue to bear primary responsibility for DOD program development and execution.

• Larry Ferderber has been named assistant deputy director for Strategic Operations. Ferderber's 33-year career at the Lab has spanned a wide variety of national security related activities. He has held management positions in Engineering,

the LLNL Nevada Organization, the Nuclear Design and Nuclear Test Experimental Science Programs, and the National Security Directorate.

Over the last several years, he has headed the National Security Office and worked closely with George Miller and the NIF Program Directorate in support of the rebaselining of the NIF Project. His appointment is effective immediately.

• Linda Rakow has been appointed assistant deputy director for Strategic Operations. She will serve as the senior business and financial adviser to Anastasio, providing strategic budget and program planning oversight for all NNSA programmatic and institutional activities under Anastasio's purview.

Prior to coming to LLNL in 1985, Rakow worked at the Nevada Test Site in a number of different assignments. At the Laboratory she has held a number of senior management positions, including principal budget analyst, AD resource manager for the Physics Directorate, business manager for Defense & Nuclear Technologies, and assistant associate director for program planning in the National Security Office. Her appointment was

effective July 15.

• Denise L. Robinson has been selected as the institutional facility manager. In this capacity, she serves as the senior facility and infrastructure adviser to Anastasio, providing site, facility and infrastructure strategic planning, investment planning, issue management and project oversight.

Robinson's 22-year career at the Lab has covered a number of different assignments, including the areas of procurement, finance, business and facility management. She has held a number of senior management positions, including principal staff analyst for the Business Operations manager, assistant deputy associate director for Administration, AD resource manager, AD facility manager, program manager for institutional D&D projects, and most recently, deputy associate director for operations in the Chemistry & Materials Science Director. Her selection was effective Nov. 1.

The full text of the Admin Memo, can be viewed at <http://www-r.llnl.gov/intranet/001news/memos/2001/po-31.85.pdf>.



## NEWS YOU CAN USE

# Orbach nominated as director of Office of Science

President George W. Bush this week announced his intention to nominate Raymond L. Orbach, chancellor of UC Riverside, as the new director of the Department of Energy Office of Science.

Orbach will remain at Riverside pending confirmation by the U.S. Senate. Upon confirmation, he will leave the campus he has headed for nine and a half years.

The Office of Science is an agency within the Department of Energy (DOE) exercising oversight of national laboratories, funding billions of dollars in university research, and helping to set the U.S. scientific agenda. As director, Orbach will manage an organization that is the third largest federal sponsor of basic research in the United States and is viewed as one of the premier science organizations in the world.

The office's fiscal year 2001 budget of \$3.2 billion funds programs in high energy and nuclear physics, basic energy sciences, magnetic fusion energy, biological and environmental research, and com-

putational science. Formerly known as the Office of Energy Research, the office also provides management oversight of the Chicago and Oak Ridge Operations Offices, the Berkeley and Stanford Site Offices, and the 10 DOE non-weapons laboratories.

Orbach, 67, is a theoretical physicist who, in addition his administrative leadership, maintains an active research program and laboratory at Riverside. Known for hands-on involvement at all levels of the campus operation, he also teaches graduate and undergraduate students. He will replace interim director James F. Decker, who was named to the interim position upon the inauguration of President Bush in January.

"This is an extraordinary opportunity to help my country achieve at the highest scientific levels. I am gratified by President Bush's trust and I am committed with all of my heart to his aggressive program furthering the nation's scientific endeavors," Orbach said.

"Ray Orbach is absolutely the best person for this

job. It is a perfect fit for his leadership talent and scientific knowledge," said UC President Richard Atkinson.

An internationally recognized scientist and scholar, Orbach went to UC Riverside from UCLA where he had served for 10 years as provost of the 24,000-student College of Letters and Science. He joined the University of California in 1963 as an associate professor and became a full professor three years later. Prior to UCLA, he was a National Science Foundation postdoctoral fellow at Oxford University from 1960 to 1961 and an assistant professor of applied physics at Harvard University from 1961 to 1963.

Orbach holds a bachelor's degree from Cal Tech in physics and Ph.D. in physics from UC Berkeley where he was elected to Phi Beta Kappa. He serves as a member of 20 scientific, professional or civic boards. He is the author of more than 240 articles in scientific publications.



## NNSA's Haeckel visits Laboratory

Dona Crawford, AD for Computation, recently briefed Brig. Gen. Ronald Haeckel, acting deputy administrator for Defense Programs in the NNSA (right), and Jonathan Ventura of NNSA (center), as they viewed the ASCI White machine. Haeckel was at the Lab for two days, Dec. 6-7, for updates on national security programs. In addition to ASCI White, he also toured the National Ignition Facility and Site 300.

ELIZABETH CAMPOS RAJS/NEWSLINE

## Technical Meeting Calendar

Friday  
14

### INSTITUTE FOR GEOPHYSICS & PLANETARY PHYSICS

"Unveiling the Galactic Center with the Chandra X-ray Observatory," by Frederick K.

Baganoff, MIT. Noon, Bldg. 319, room 205 (badge required). Contact: Josie Morgado, morgado2@llnl.gov.

### INSTITUTE FOR SCIENTIFIC COMPUTING RESEARCH

"Introduction to the Sheaf Data Management System," by David Butler, Limit Point Systems, Inc. 10 a.m., Bldg. 551W, room 1400. Contacts: Ghaleb Abdulla, 3-5947, or Leslie Bills, 3-8927.

### DEFENSE & NUCLEAR TECHNOLOGIES

"Recent Evidence of Plutonium Aging: Its Interpretation and Implications," by Bill Wolfer. 10:30 a.m., Bldg. 132 auditorium, room 1000 (cleared area). SP access is required. Contact: Mark Herrmann, 2-6999.

### LINAC FACILITY

LINAC Open House. 10 a.m. to 1 p.m., Bldg. 194. The LLNL electron-positron linac facility will hold an open house to showcase new capabilities added recently. All LLNL

employees are invited to participate. Contact: Dennis Slaughter, 2-6425.

### CENTER FOR APPLIED SCIENTIFIC COMPUTING

"Terascale Simulation of Trade Cumulus Convection," by David Stevens. 10 a.m., Bldg. 451, room 1025 (uncleared area). Contact: Leslie Bills, 3-8927.

Tuesday  
18

### PHYSICS & ADVANCED TECHNOLOGIES

"Beyond NIF: The Challenge of Developing Ion Beam Drivers for Fusion Energy," by Grant Logan. 2

p.m., Bldg. 219, room 163 (badge required). Contact: Leslee J. Markham, 3-9699.

### MATERIALS SCIENCE & TECHNOLOGY

"Sub-Angstrom HRTEM," by Alexander Ziegler, UC LBL. 10:30 a.m., Bldg. 235, gold room (uncleared area). Contact: Geoff Campbell, 3-8276, or Roberta Marino, 3-7865.

Wednesday  
19

### SYSTEMS AND NETWORK DEPARTMENT

Macintosh Technical Seminar Series, featuring a presentation on Virtual PC 5, by Kurt Schmucker, Connectix

Corporation. 10:30 a.m., Bldg. 543 auditorium (uncleared area). Contact Duane Straub: straub1@llnl.gov.

Thursday  
20

### ICF HEDES PROGRAM

"Accretion and Energy Release in Disks Around Black Holes," by Neal J. Turner, University of

Maryland. 9:30 a.m., Bldg. 219, room 163 (badge required). Contacts: Bruce Remington, 3-2712, Renee Pletcher/Sue Escover, 2-6710.

Friday  
21

### INSTITUTE FOR GEOPHYSICS & PLANETARY PHYSICS

"Measuring Neutron Star Radii" by Robert Rutledge,

Caltech. Noon, Bldg. 319, room 205 (badge required). Contacts: Chris Mauche, 2-7017, or Josie Morgado, 4-5201.

The deadline for the next Technical Meeting Calendar is noon, Wednesday.

# AROUND THE LAB



## Lab groups deliver yearly holiday cheer



JULIE KORHUMMEL/NEWSLINE



Toys for Children, an employee-sponsored gift drive, once again collected more than a sleighful of toys and gifts to be donated to area charities. Lynn Groves (upper left), who organized the drive, received a handmade wreath from Barbara Due's preschool class from the Council for the Spanish Speaking child development center. Adan Ochoa (upper right), who attends the center, came by to look at the toys and make his holiday choices. Each year the carpenters make cradles (above), and the Piecemakers make accompanying quilts.

At MMED, Kelye Allen, Monika Witte, John Fry and Mike Prokosch enjoy the annual holiday spaghetti feed, where employees also donated toys. At far right: Diane Martz, Monika Witte, Hugh Watlin and Shirley Rock.



The deadline to turn in packets for the HOME Campaign has been extended to Dec. 17.

### HOME contributions to date: \$1,175,681

| Directorate                                 | Total Employees | No. of Contributions | \$ Donated         | % Participation |
|---|-----------------|----------------------|--------------------|-----------------|
| Energy and Environment                      | 316             | 135                  | \$48,637           | 43%             |
| Computation                                 | 989             | 297                  | \$140,116          | 30%             |
| Safety, Security & Environmental Protection | 991             | 352                  | \$103,208          | 36%             |
| Physics & Advanced Technologies             | 395             | 177                  | \$65,753           | 45%             |
| Defense & Nuclear Technologies              | 401             | 227                  | \$95,117           | 57%             |
| Chemistry & Materials Science               | 470             | 209                  | \$98,956           | 44%             |
| Laboratory Services                         | 1354            | 548                  | \$137,903          | 40%             |
| Engineering                                 | 2092            | 665                  | \$264,436          | 32%             |
| NIF - ICF                                   | 192             | 93                   | \$33,609           | 48%             |
| CFO   | 94              | 56                   | \$14,514           | 60%             |
| NAI   | 250             | 143                  | \$61,013           | 57%             |
| Director's Office                           | 158             | 63                   | \$33,054           | 40%             |
| Administration                              | 290             | 118                  | \$28,630           | 41%             |
| Biology & Biotechnology Research Program    | 231             | 98                   | \$24,806           | 42%             |
| Supplemental Labor                          | N/A             | 82                   | \$20,949           | 0               |
| Others                                      | N/A             | 20                   | \$4,980            | 0               |
| <b>TOTAL</b>                                | <b>8,223</b>    | <b>3,283</b>         | <b>\$1,175,681</b> | <b>40%</b>      |



## CLASSIFIED ADS

See complete classified ad listings at  
<https://www-ais.llnl.gov/newsline/ads/>

### AUTOMOBILES

1985 - Nissan Maxima 6 cyl, 5-speed manual, 235K miles, recent smog, well-maintained, all records, \$1700 obo 925-447-6719

1989 - Pontiac Bonneville LE, power door-locks & windows, excellent 3.8 liter engine and trans, new paint & many new parts - \$1900 925-829-1794

1991 - Explorer XLT, original owner, really clean, loaded, 140K miles, \$3,900 or best offer 925-484-4099

1976 - Cadillac Fleetwood Brougham in great mech. shape, a good one for a car Buff. 209-825-4632

1999 - Acura CL 2.3 Coupe 2 door, leather, power windows/locks, CD, auto moon/sun roof, tinted windows, alloy wheels, new tires and brakes. \$14,200. 925-648-0671

1993 - Honda Civic EX, 2-dr, 5 spd, A/C, Stereo w/ CD, approx 150k mi, drives well, great commuter/student car. \$4700 obo 925-736-9452

1993 - RX-7 R1 Yellow, Great Shape, Rare, 0-60 in 4.7 seconds, after market upgrades. Interior very clean, special black cloth race seats. \$20,000 obo 925-449-1578

1996 - Dodge Grand Caravan SE, 3.3L, 58K miles, second sliding door, roof rack, Infinity sound system, many other options, very clean. \$11,000 or B/O. 209-832-8515

1997 - Subaru Impreza Outback Sport, 78K miles, \$10,500. See [www.goldino.net/subaru](http://www.goldino.net/subaru) for complete details. 925-371-1607

1972 - White Mother of Pearl 72 Grand Prix, Black Vinyl Top, Black Interior w/ power seats & windows. \$8,000 OBO. 209-832-0976

1997 - Mitsubishi Eclipse GS-Turbo = Fully loaded, leather, sunroof & spoiler. Black. 75K miles. \$12,000 obo. 925-243-1232

1986 - Toyota van, 135K miles, tan color. Runs well. \$3000 OBO. 925-455-1719

1982 - Datsun 280ZX. Needs a good home. \$600 925-449-8304

1930 - model A all parts to put back original or hot rod. 209-522-4427

1988 - Van Custom Ford Econoline, V8, AC/HT, fold down bed, TV/VCR 130K. Great for kids, camping, sporting events. 4K OBO. 925-449-3152

1994 - BMW 325i 4 door, 5 spd, sunroof, premium sound, new brakes, clutch, tires, always tuned, a steal at \$10,500. 925-240-7019

### AUTOMOBILE ACCESSORIES

Ford 302 heads, rebuilt and ready to bolt on. \$400 925-455-1967

Torque wrench (unused), induction tune-up dwell meter, induction timing light. Make offer 925-282-7799

Toyota pickup or Tacoma factory aluminum rims 15 inch like new and tires 31x10.5 good tread. \$200 obo 925-449-4262

Ground Control lowering springs for 1997 Mitsubishi Eclipse. \$100.00 925-243-1232

Honda civic factory manual for 1.3 and 1.5 engines, covers everything, \$25.00 925-484-4099

Tire chains. Purchased years ago for LR78-15 tire size (Suburban) and never used. \$25. 925-447-6221

### BICYCLES

Girls Bike, single speed, foot brakes, \$15. 925-454-0877

Specialties mountain bike. Great con-

dition hardly used. Can NOT deliver. Pickup in Tracy. \$100 or BO after 4pm 209-835-3352

### BOATS

89 SUPRA Tournament ski boat. Open bow, Bimini top, Skylon, CD. Blue & white \$11,000 925-754-6390

Sail, mast and boom for sail board. Like new. \$300 OBO 925-455-4208

### ELECTRONIC EQUIPMENT

Nintendo64 Game Console, 3controllers, additional memory cards, Tremor pack, 7games including PD. Perfect, ideal for Christmas. Best Offer 925-282-7799

Apple computer, keyboard & black&white printer, computer is approx. 10 yrs old, runs great. \$75 for everything. 925-447-5132

Nintendo64 gameconsole+2 controllers+7 games. We are upgrading to GameCube. Roberta (after 6pm) \$150.00/Best Offer 209-464-2552

Macintosh 2SI with extra external hard drive, monitor, external CD ROM, StyleWriter 1200 printer, all accessories and manuals. \$150 OBO 925-371-0558

Cell Phone, Nokia, with leather belt-clip holder, headphones, Car Adaptor/Recharger and AC Recharger. New - \$175. 1 year old, asking \$50/OBO 925-449-5723

IBM Thinkpad laptop, 486 processor. Best offer. 925-455-1719

GAMEBOY COLOR, green with PIKACHU carrying case, POKEMON BLUE game \$75 or best. 2.5 inch B/W SONY TV with adaptor, Best Offer. Call evenings 925-866-1477

### GIVEAWAY

FREE Toilet bowl, Kohler Wellworth Lite (current model), 1.6 gpf, white. Buy a tank and you are ready to go. Excellent condition, fairly new. FREE! 925-606-9575

Wood Xmas decorations - good condition. Sleigh and reindeer. You pick up! 925-373-9128

Sony color TV, (works fine except bad tuner) plus VCR (no play but good tuner) The two add up to a working TV with remotes. 925-447-6221

Complementary facial in my home near the lab over your lunch hour. Karen, Mary Kay Independent Beauty Consultant. 925-292-1624

Remove tree, keep wood. I take care of litter. 20 ft x 18 base. will assist removal. 209-823-6984

Redwood decking scraps and support piers. I also have numerous cubic feet of wood chips for ground cover. 209-832-1321

Apple Performa computer. 925-447-3432

6 foot artificial Christmas tree. Includes storage box and stand. Must take by 12-17-01. Can deliver to lab. 510-471-6303

### HOUSEHOLD

Oil filled 1500 Watt space heater. \$15. 925-245-4570

For Sale: Whirlpool built-in trash compactor. Barely used. \$250.00. 925-373-7579

Antique bedroom set, Victorian, walnut, 2 dressers and double bed, \$1200. 925-447-7780

Small pine natural wood bookcases; approx. 40 inches wide x 48 inches tall, rarely used, nice looking. \$15 each/\$25 for both/OBO. 925-455-4208

Kenmore washer & dryer, like

new. Moving, must sell. \$250. 925-243-1373

Oak roll-top desk, \$350/obo, Oak 4 drawer file cabinet, \$300/obo, excellent condition 925-743-2323

Nice wooden childrens play structure. Two swings, slide, climbing bars and platform. \$250 OBO. 925-455-1719

Lg. solid oak entertainment unit (glass doors) \$275.00. Solid oak daybed w/trendle (incl. mattress) \$150.00 925-447-8291

Rescue Hero Firetruck, like new, \$15. 1 Gal. air compressor (small), nearly new \$75 925-294-9022

Sofa: White with loose-back pillows in teal. Very nice \$150.00 209-786-5967  
 SONY TV. 20 in Stereo. \$50 510-531-4668

Oak 54 in. roll top computer desk, \$650, Kirby G-5 Vacuum, \$550. 2 Large Krause Down Sofas, \$150 & \$250. After 5pm 209-838-3195

42 inch antique clawfoot oak table with 4 antique high-back chairs. All structurally sound, just old. \$650 or best offer. 925-449-7760

This End Up 3 drawer dresser w/ rope handles (\$25). Black comp desk, <2 yrs (\$20). 925-243-9423

Toddler bed frame + mattress, excellent condition \$50 OBO. Toddler bed frame, excellent condition \$20 OBO. 925-371-4479

Office desk, grey steel, 30 x 60 x 29 inches high, one file drawer, very solid, \$70. 925-454-9291

Wall Units (2): 6 ft high, Pine with dark finish, floral design on lower cabinet doors, \$50 each. Contact Jim. 925-371-6882

(2) fabric matching loveseats with accent pillows in great condition. \$300 for both OBO. 925-449-4947

Crib - Solid Oak w/mattress. Top of the line, excellent condition! Hardly used. \$120/OBO -- 209-598-6047

Oak pedestal dining table w/4 Windsor chairs. \$200.00 for set. 925-373-6870

One beautiful Fur walking jacket. Nutria with fox collar. \$2,200 or best offer. paid \$4,000 originally from I. Magnins. 925-447-4722

Pfaltzgraff dishes, serv. for 8, acadia pattern w/all serving pieces, exc. cond., \$125. 209-941-9114

China, 10+ place stg. Haviland, Bluefloral w/Platinum rim \$150 obo Bob 925-443-5652

Computer table, 30X45 with tower compartment, plug strip and switch. black met., white top 925-447-0856

China hutch, must sell cheap \$150.00. 925-447-5746

Beautiful oak roll-top desk, 2 file drawers, 2 small drawers each side, center drawer and many small drawers/cubbies. \$1000.00/bo 925-373-1926

Queen mattress, boxspring & frame, upright vacuum, Graco Stroll-a-Bed, Kolcraft infant carseat, computer table. Call (925) 947-5411 first. 925-837-6135

Fisher In-Fireplace Stove. Fits 36X25 opening. Best Offer. Call for appointment. (Manteca) 209-825-5615

Bed and mattresses: single, beautiful, cherry, four-poster. \$100 925-828-3143

7 ft. artificial Christmas tree, used once, cost \$150, will sell for \$70, includes tree storage bag. 925-468-0936

Wood Desk \$30, Straight back chair \$10 and computer stand \$10 925-600-0604

Air Compressor, Emglo DVS, 100% duty cycle, 150psi, dual control, 8 gal. twin horizontal tanks, like new, \$350obo. 925-837-4542

Dryers Kenmore electric, reconditioned, almond large capacity, \$95 925-443-5565

Matching solid oak coffe table and (2) end tables with glass top accents. In good condition. \$350 for the set OBO. 925-449-4947

Canning supplies, including a pressure canner/steamer and mason jars. Price negotiable. Call Sandra. 925-484-3847

Entertainment Center. 55w x 51h x 17d. Light wood. Glass door with adjustable shelves, 2 drawers plus lower cabinet. Excellent condition. \$100 925-837-1770

Thomasville Cherry wood dining table w/leaf and four chairs including side buffet table/cabinet. Excellent condition. \$300. Call Todd. 925-373-8239

5-piece oak dining set w/leaf and two-swivel oak bar stools, located in Manteca. Very good condition, asking price \$440. You pick up. 209-824-2618

Wicker Living room set-couch, chair, automan, coffee & end-table \$250; Electric clothes dryer \$100; dining room set-table w/6 chairs and buffet \$250 925-455-0926

Zero Gravity Chair, Teak wood/blue Leather for a tall person. \$200 209-838-6859

Bassett White Crib w/Simmons mattress & Cover. Set-up but not used. Perfect. \$150.00 925-447-2224

### LOST & FOUND

Found black rabbit fur collar or scarf on asphalt behind B217. 925-243-1006

### MISCELLANEOUS

Classic Transformer/Go-Bot toys in unopened boxes. Great for Christmas. 925-282-7799

Rowing machine, Concept IIc. Like new, hardly used. \$600/OBO 925-455-1967

Moving boxes \$1 each OBO. Exc condition, used once. 925-371-6882

New barber set \$15, Sears heavyduty sander (\$70), scroll saw (\$70), or best offer. 925-282-7799

Moving boxes, 25-30 maybe more, all sizes, file storage size w/lids, small, medium, large. \$30 209-239-0663

For Sale-CRAFTSMAN MIG WELDER. Used very little, has cart on wheels & includes spare tips, wire, reg. & Ar/Co2 bottle w/gas. \$225 or Best Offer. 209-825-4632

Aluminum rims (set of 4) 5 lug 8 inches wide \$100 925-634-6353

Golden Europs Daisy plants, 8 oz cups, small but healthy, will grow fast, \$1 ea blooming. 925-447-6192

Mapex brand snare drum. Maple, 5.5x14 translucent mid-night black. New in box. Stand included. \$225 firm. 925-243-1373

Pellet BBQ/smoker 36w x 18.5d x 45t, pellets and starter chips, excellent condition \$275/obo. 925-743-2323

Assorted Beanie Babies, \$7each, ready for holiday stockings. 925-447-3432

Mac Classic computer. Barely used. Best offer. 925-455-1719

4 wheel walker. Has seat and hand brakes. Cost \$250 new, sell for \$100 925-454-1422

Mitre saw mfg. by Jorgenson. \$25.00. 925-447-1724

One-of-a-kind handpainted sweatshirts (\$29) and t-shirts (\$22); make great X-mas gifts. 209-835-2914

GEORGE HARRISON Autographed Cloud Nine Album, Framed, 100% Guaranteed Authentic, Perfect

Condition, Great X-Mas gift for Beatle fan \$750.00 925-443-4895

Picket fence, redwood painted white, 50 ft assembled (you remove & haul) plus extra pickets (20ft), \$50. 925-294-9022

European camouflage for sale. British, Czech, Russian VSR, New Zealand, Dutch etc. One British DPM sniper smock (\$185). Buy, sell, trade. 209-835-4281

FRANKLIN MINT Monopoly game with custom glass top. Never used. Still boxed. value = \$700, sell for \$425. 209-832-0474

Band saw, 12inch Sears, Mobile base, Slow speed adapter, extras. \$150 925-935-5004

Oak rolltop desk. 7 drawers (2 file drawers) Med. Oak, 14 yrs old, minor scratches. Measures 54 in. wide, 45 in. tall 24 in. wide. \$250. 209-835-9082

Levi Silver Tab jeans 4 pair 30x34L, great cond, no holes, tears or stains, \$10/pr, various shades of blue. 209-835-9082

Old Navy, Womens XS down vest, reversible, red and light blue. Exc. Cond. \$15.00 GAP, girls down jacket, sz L. Blk. Exc. Cond. \$30.00 209-835-9082

Lionel 0/027/ gage diesel locomotive in show case \$125.00 925-447-6728

BRIO wooden train sets - track, bridges, trains, etc. - 3ft X 5ft layout. Paid over \$350. Sell \$125. 925-362-9078

Welder, Miller Thunderbolt XL CC, AC/DC, 225/150 amps, input 230 volts 47.5 amps, good cond., \$250obo. 925-837-4542

Medela Professional Breast Pump \$100.00, Blue Tubular Toddler Bed with Mattress \$15.00, Mickey Mouse Crib Set and Lamp \$40.00. All Great Condition. 209-944-5524

Duck Decoys, hand painted. Unique gift for outdoorsman for office or home. Both Mallards and Wood ducks, \$36. 925-648-8008

Yard Man Riding Lawnmower. 2yrs old. Great condition. \$850 or best offer. 925-455-6310

### MOTORCYCLES

Mini Bike- 5HP Tecumseh new paint, seat, throttle, jackshaft. Starts right up. Brakes need adjustment. Includes new helmet 209-824-1682

2000 - Yamaha YZ426 \$5000/obo and YZ125 \$4000. Both showroom clean, except. maintained. Renthal, Factory Connection, FMF, etc. New top end/clutch (YZ125) 209-832-7431

### MUSIC INSTRUMENTS

Suzuki violin, 1/4 size, Wolf violin headrest (1/2 size), Violin Strings, all like new. Make offer 925-282-7799

LP brand bogos & congas with stands & bags. Hardly used. \$300. 925-243-1373

Nice Beginners trumpet. Good shape, needs oiling. \$85 925-449-0388

### PETS & SUPPLIES

FREE adorable kittens. 9 weeks old. Litter-box trained and cat scratch post trained. 209-892-8003

Dogloo dog house for medium sized dog. Like new. \$20 OBO 925-455-4208

Ball python with tank and all accessories. Very gentle likes to be held. \$75.00 obo. 925-447-6942

One Buff Orphington rooster left - free 925-443-1547

5 month old male border collie, neutered, all shots, potty trained, lov-

**BUILDING***Continued from page 1*

To ensure employee safety, the portal just east of Bldg. 151 will be closed during construction. Another portal is available just south of the construction area beside Bldg. 141.

The two-story, 22,000-square-foot building, to be numbered Bldg. 155, will be built in the lawn area immediately east of Bldg. 151 and will be about the size of Safeguards and Security's Bldg. 274.

"The new building will allow CMS to increase the number of permanent offices available next to Bldg. 151, the Isotope Sciences Laboratory Facility," said Mike Atkinson, the Plant Engineering project manager.

The new building will house 65 offices and a 150-seat auditorium, about the size of the Bldg. 543 audi-

torium. "This will provide a meeting place and a venue for scientific and technical seminars, and is large enough for Division-wide meetings.

The façade of the building will be concrete block with windows extending from the ground to the top of the second floor. The design was completed by Fong and Chan Architects, an award-winning firm from San Francisco. The contract for construction was awarded to GSE Construction of Livermore.

The project will take about 15 months to complete with occupation of the building scheduled for spring 2003. Funding for the \$8 million project was approved in 1999.

Construction of the new office building is one part of the Isotope Sciences Facility project, which consists of several sub-projects. Other project components include seismic retrofitting of Bldg. 151; retrofitting of the Bldgs. 151 and 154 ventilation systems and clean-

up of material and equipment in Bldg. 241.

Design work began earlier this year to make structural upgrades to Bldg. 151 necessary to meet DOE seismic requirements. Upgrade construction on the Bldg. 154 ventilation system, including the addition of two new exhaust systems, was completed in November. Design for similar upgrades and retrofitting in Bldg. 151 began in April.

Legacy equipment in Bldg. 241 will be characterized, decontaminated where required and removed in 2002, 2003, and 2004 allowing the building to be returned to use for CMS program activities. Removal and clean-up of roof-mounted exhaust equipment was completed in 2000.

The project was approved in fiscal year 1999 and is funded through 2003. Work on the \$17.4 million project began in January 2000 and is scheduled for completion in the summer of 2004.

able, playful, \$400 to good home with poss. visitation rights, pics avail. 925-785-5274

**RECREATION EQUIPMENT**

Rowing machine, Concept IIc. Hardly used. \$600/OBO 925-455-1967

Health Rider, new condition. \$500.00 new. Will sell for \$75 or BO. 925-447-5132

SAUNA- 2 person Softhead cedar indoor sauna. New condition Paid \$3800.00. \$2000 firm 925-371-0318

Nordic-Track (Sequoia) \$50.00 925-829-3816

AB-Doer II abdominal exerciser. Like new, less than 1 year old. Paid \$100/asking \$35 OBO 925-455-4208

Texan loader w/12ga & 20ga dies & some wads. \$50 925-443-1547

**RIDESHARING**

Express your commute, call 2-RIDE for more information or visit <http://www.rlnl.gov/tsmp.

DANVILLE - Near Camino Tassajara & Crew canyon - 2 drivers/riders seeking additional members to carpool from south Danville. 8:00 - 4:45 925-736-9441

Lafayette-Moraga-Orinda - Lamorinda carpool needs 4th rider-driver. Lab hours 8:15am-5pm. Meets 24 & St. Stephens. 925-253-0498, ext. 2-9823

**SERVICES**

Interior & Exterior House Painting - Over 15 yrs experience, free estimates. Will be available through the holidays. 925-447-5132

Shop online with Karen, Mary Kay Independent Beauty Consultant: or call to schedule a free facial near the lab. 925-292-1624

**SHARED HOUSING**

Modesto - Room for rent \$300.00, separate bath, full privileges, most pets okay. 209-537-8458

Livermore - Room in 3BR/2BA home, private bath, simple furnishings available, full privileges, N/S N/P; \$500 + Dep + partial utilities. 925-455-5362

Tracy - 2 Rooms for rent- \$500 & 450- + 1/3 utilities Full privileges, no smokers/pets Avail 1/1 EZ Freeway access Corrol Hollow/Grant Line 209-835-7127

Tracy - Home For Rent 3 bdrm (2 Large), 2.5 bath w/Loft close. Cul-de-sac and close freeway access. No smokers/pets Available 1/1 \$1,495 + deposit 209-835-7127

Livermore - 1 mile to LLNL, Share 3BD/2BA house with one person. Bedroom, Own Living Area, Private Bath, Wash/Dry, NS/NP, \$775 Month + Deposit and 1/2 utils 925-373-1166

Livermore - Need 1 bdrm 1/8/02 925-454-0753

Livermore - Room in 3bd/2ba home-

shared bath, \$550m+1/3 utilities.Great location,quiet, clean, and comfortable for the right person.Pref-Female, N/S,N/P 925-819-0407

Livermore - Room for rent. Non/smok, \$500.00 mo., all privileges. 925-449-1474

**TRUCKS & TRAILERS**

1984 - Toyota SR5 4x4 extended cab, new 22R motor w/smog legal cam & header. Rebuilt 5-speed, limited slip rear end. Performs better than original. \$4000 925-963-7796

1985 - Chevy Suburban - Started restoration, just needs some TLC to be great! Sacrifice at \$1500.00 Or BO. 925-447-5132

1993 - Chevy Class C motorhome 24 foot fully self contained Air genarater Rear bed sleeps 6 great cond. \$ 15,500 obo 925-606-9525

1997 - Dodge Dakota - Club Cab SLT Truck, excellent condition, 68K miles, \$11,000 or B.O. - below Blue Book at this price! 925-443-1248

88 - Nomad 5th Wheel, 29 ft. Fully loaded. A/C AM/FM Radio Microwave. Wired for Cable. \$5000.00 925-828-3044

1998 - Motorhome, Class C, Itasca Spirit, 22 ft.,454 Vortex engine, gen., AC, clean and excellent condition, 37 K miles, \$25K 925-447-7780

1975 - Rollalong, called the best motorhome from the 70s, class C, bath in rear, always garaged, immaculate! 79k miles, well-maintained. \$4950/offer 925-455-5439

1997 - GMC 1500 PU Club Coupe Short Bed, 32K mi, excellent cond., hard tonneau cvr, tow pkg, chrome pipes & wheels, \$16K 925-449-3478

1990 - Ford P/U F-250, Extended Cab, 7.3 Diesel, Runs great, Extras. \$6250 OBO. 209-946-0645

1994 - Ford F150,66k, shortbed,dual tanks,4.8 fuel inj,5speed stick,bedliner,am/fm/cd, new tires, red w/gray int. good cond. Below blue book, \$7400. 510-708-0701

1997 - Jayco Eagle 31ft. 12ft. slide out, Excl cond. 12.5k obo. 209-815-0385

1996 - Chevy Cheyenne 1500, X-cab, 4.3L, V6, AT, AC, Cruise, Tilt, Air Bag, AM/FM/Cass., 85K mi, runs great, \$9,000 OBO 925-454-8918

1974 - VAN Ford E300 low mileage runs good. \$1,400. 925-443-1172

1979 - Chevy 1/2 ton rebuild transmission new brakes new wheels 3,300 obo 925-447-0558

1997 - Ram 1500SLT,5.9 4x4X-cabw/s.b. Flame Red, good 265/75R, options galore,cliff. alarm & nerf bars,\$12,500. 925-606-5669

1999 - Dodge Ram 1500 SLT Lariat Quad Cab 5.9L,Tow Pkg,Power Everything,AM/FM Cassette,18000 or B.O. Must Sell! 209-632-4568

1989 - GMC S15 Longbed PU,

Green. A/C, AM/FM Cass. 2.8 liter V-6, 5 spd. 27 MPG. 225k \$1,600 or B/O. 209-848-4849

91 - Chevy, Z71, 4x4, 350, automatic, power windows and doors. Tilt, CC, AC, CD and Camper Shell. \$8,000. 209-892-6720

1996 - Dodge Ram 2500 SLT Plus, Long Bed, Club Cab, 2WD, V-10. 106,000 mi, Perfect Condition, \$9,900.00 209-962-7431

1989 - GMC S15 Jimmy, 4.6L V6, 123K miles, Auto, PS/PB/PW/PD L/C/D, towing pkg, clean int/ext, very good running condition, 1 owner, all records, \$4,100/obo. 209-823-8270

93 - White, 5 speed Chevy S-10, v-6, bed liner, new cd player, new clutch 172k, great shape. \$2700(obo) 925-634-0117

1984 - Ford Ranger 4X4, five speed, six cyl with fiberglass shell and grill guard good condition make offer over \$3,000 925-449-8297

1992 - Ford F350 4x4,460cid, 4door, new tires/brakes, rebuilt trans,flow masters,tow pkg,captain seats,custom bumpers,cd,pwr everything,132k miles \$11,000.00 925-240-1962

1989 - GMC 1/2 ton, 4x4 Sportside, A/C, power windows, power locks, P/S, P/B, class IV trailer hitch. Runs and looks good. \$6,500. 209-834-1988

1993 - Ford Ranger Splash, White, 5 speed, A/C, AM/FM cassette, bed liner & cover, 112K miles, \$4,000 OBO. 925-513-9019

1981 - Datsun Longbed w/shell. All new brakes and master cylind, new radiator. 70k on engine, 30k on trans & clutch. spare prts incl. \$1200 209-599-3531

1993 - GMC Yukon SLE, 4x4, 84,000 miles, orig. owner, great condition. \$11,500. 209-836-3041

1990 - GMC Suburban, 2500, 4-wheel drive, white w/blue interior, very good condition, 237K miles, \$3,900. 925-640-3686

1993 - GMC SONOMA 4x4. Ext Cab, Shell, Bedliner. Original owner. \$4600 925-937-6267

1979 - Coleman Valley Forge tent trailer. Hard top, 12/19 ft long, 1150 lb, sleeps 6, heater, fold-up kitchen, well-maintained. \$1200. 925-455-8895

1988 - Ford ranger long bed pickup truck with shell, 2.9 V6 5 speed manuel. \$950 obo. after 5:00 PM. 925-672-9827

**VACATION RENTALS**

South Lake Tahoe - modern 3-bdrm, 3-bthrm, 1800 sqft condo, Heavenly Valley, 2 min. walk to ski-lifts. Available 1/26-2/2. Call after 7pm. 925-447-8144

3 Day Cruise to Ensenada Mexico, 3/8/02 thru 3/11/02, sail out of San Pedro, Inside Cabin \$329.85, Outside cabin \$359.85 209-832-4535

condo: ocean view, white sandy beach, pools, tennis, BBQ, snorkeling, whale watching. Pro golf nearby. Low LLNL rates. 925-846-1459

**WANTED**

Wanted: 150 - 153cm Burton Snowboard in good condition. 209-835-5031

Computer with printer for boys juvenile home in Stockton would like to have for Christmas. 209-832-7112

Custom cabinet, to be made for TV and VCR (entertainment center). 209-892-6186

Old Coke machines, pinball machines, and juke boxes. 925-449-0388

Wanted. Sewing machine: Pfaff, Viking or Bernina in working condition. Reasonable. 925-449-4963

Bayonets and insignia wanted, US made. 209-835-4281

WANTED:Stackable washer and dryer 209-236-1754

Burger King Simpson Halloween Toys: Barney, Ned Flanders, Dr. Hibbert, Principal Skinner, Homer, Groundskeeper Willy, Grandpa. Will pay \$5 each. 925-447-5808

Outdoor Christmas Lighted 3D deer/buck decorations, working or not. 209-825-5222

Make income on your motorhome! Rent it to our family for a trip to Arizona between Christmas and New Years this year. 925-443-5714

Looking for small (childs) wood desk for my sons room, boy age 6, in good condition. 925-634-8134

WANTED: Old stereo equipment, vacuum tubes, speakers, amps, consoles, etc. 925-443-2954

# Guidelines

*Newsline* is not responsible for any errors contained in the classified ads. It is up to the employee to proofread his or her ad to make sure it contains the correct data, including the phone number.

Employees are reminded that only car- and vanpool ads may contain Lab extensions. E-mail addresses are not allowed.

Due to space limitations, *Newsline* cannot run ads that are submitted in all capital letters. "Personals" ads are not permitted either.

Employees may submit one ad per category, but may not include the same ad in more than one category.

Ads may only be submitted through the Employee Ads Web Services site <https://www-ais.llnl.gov/newsline/ads/>

**DIABLO***Continued from page 1*

physically or economically impractical.

"With the global proliferation of information technologies, commercially available satellite imagery and advanced weapons systems, the U.S. must focus on developing ways to best gather and distribute information on a global scale in near real-time, to maintain its technological edge," said Tony Ruggiero, principal investigator and SATRN project leader. "In the 21st century, the decision-maker will be forced to assimilate and act on information in a shorter time than ever before."

This assimilation of information is increasingly difficult as tactical and strategic reconnaissance and surveillance assets become more sophisticated and develop greater capabilities, requiring the transmission of ever more massive quantities of data, Ruggiero said. "Communication bottlenecks between command centers and tactical and strategic assets make the present information transport system slow, incomplete and unresponsive. A new generation of long-range, covert, high-capacity data links is required to remedy this situation and provide near-real-time data transport. Lasers have the potential to fulfill this need."

Laser communication consists of an optical system in which information is encoded on a laser beam and transmitted to a receiver. Functionally similar to radiofrequency or microwave communications, lasers use the optical part of the electromagnetic spectrum.

Ruggiero emphasized that the laser beams used for communication are not visible or harmful in any way. "The actual power transmitted is 100 times less than a standard household light bulb. But since it is highly directional, it can be transmitted over long dis-



To develop a wireless means of transmitting large quantities of data, Lab scientists and engineers use the SATRN relocatable transceiver and the SATRN command and control van to conduct communications experiments between Mount Diablo and the Laboratory.

tances. "

Systems for transmitting data using lasers over short distances of 100 to 500 meters — between buildings, for example — are well established. The challenge of the SATRN project is to extend that range to tens of kilometers while maintaining a high "availability," the percentage of time the link is accessible at an acceptably low "bit-error-rate," or the number of errors per bit of information transmitted.

Lab scientists will need to study the effects of atmospheric conditions on air-optic laser communications over long distances. Also, such beams cannot pass through opaque objects. A bird flying through the beam path would result in a data transmission error. The bird would be completely unharmed and unaware of any contact with the laser beam.

"One of the things we're doing is developing error coding techniques to correct for this situation," Ruggiero said.

Another advantage is that laser communication is

not affected by electromagnetic interference from other forms of wireless communication such as radio or microwave. Neither does it have any effect on these other wireless communications.

Mount Diablo was chosen because it's the highest point in the Bay Area that provides a clear line of site to the Laboratory and because researchers will be able to set up equipment at an existing U.S. Navy communications facility there. The Lab has received permission from the Navy and advised appropriate regulatory and governmental agencies while DOE is in the process of obtaining approval to modify the existing license agreement. The experiments, which will be conducted at different times of day, pose no danger to park users. Beams will be transmitted and received from an elevated platform in the Navy facility.

Researchers will conduct as many as 20 experiments over a

two-year period with each experiment lasting three to five days, according to Ruggiero. On experiment days, data will be collected on and off throughout the day to sample changing atmospheric turbulence and weather conditions.

"We want to conduct the experiments at different times of the year to test the performance of the laser communication system in a variety of air turbulence and weather conditions."

He notes that there's a good deal of commercial interest in this area of communication research. "It is an extension of work being done by major telecommunication companies to address the so called 'last mile problem' to longer ranges, mobile platforms and rapidly deployable communication infrastructures," Ruggiero said. "Data-centric networks play a key role in future visions of tele-medicine, tele-maintenance, emergency response, natural disaster prediction and warning, military planning, and intelligence gathering."

**CO<sub>2</sub>***Continued from page 1*

pH (acidity) of the ocean and prevent it from becoming more acidic," Caldeira said. "Furthermore, the dissolved limestone would tend to keep the carbon dioxide in the ocean and out of the atmosphere. This process would occur naturally anyway, but on about a 6,000-year time scale."

LLNL scientists are now engaged in both experimental and modeling work to study the feasibility of the proposed method of ocean carbon sequestration. Caldeira said initial results appear promising.

Researchers believe that the carbonate dissolution process would expand the capacity of the ocean to store carbon dioxide while minimizing the amount of carbon going back into the atmosphere, unlike some of the other forms of carbon dioxide sequestration.

Direct injection of carbon dioxide into the deep ocean will likely negatively impact marine organisms and their ecosystems, due to the increased acidity.

Recent research shows that the acid-base imbalance can cause exoskeletal components to decay, retard growth and reproduction, reduce activity and cause loss of consciousness and even death to deep ocean marine life because of a disruption of oxygen-transport mechanisms (Science, Vol. 294, p. 319-320).

In addition, Caldeira showed in previous studies that unless carbon dioxide is converted to some other form before injection, it will degas back to the atmosphere when diffusion or ocean circulation returns it to the ocean surface.

In ocean fertilization, the biology of phytoplankton (which grows close to the ocean surface) is changed so that it increases the conversion of carbon dioxide to biomass. The conversion is likely to transport acidity from the surface ocean to the deep ocean.

Rau said private companies operating power plants would need incentives to start a carbonate dissolution program.

"They need motivation to sequester carbon dioxide, and they need methods that are effective and are economically and environmentally practical," he said.

"Carbonate dissolution allows a power plant to continue burning fossil fuel but eliminate at least some of the carbon dioxide that is emitted, and in a way that is probably less expensive and more environmentally friendly than other carbon dioxide sequestration methods."

LLNL researchers presented their findings Wednesday at the AGU meeting during a press conference titled "Global Warming Mitigation."



Newsline  
UC-LLNL  
PO Box 808, L-797  
Livermore, CA 94551-0808

**SEARCH***Continued from page 1*

successor is complete.

The Screening Committee members are: Mike Colvin (Biology and Biotechnology Research Program); Glenn Fox, Gil Gallegos, Judy Kammeraad, Andrew Quong, and Charlie Westbrook (Chemistry and Materials Science); Steve Ashby (Computation); Elaine Chandler

(Defense and Nuclear Technologies), Norm Burkhard (Energy and Environment); Glenn Mara (Engineering); Warren Hsing (NIF Programs); Melanie Elder (Nonproliferation, Arms Control, and International Security); Andy McMahan (Physics and Advanced Technologies); and Laura Gilliom (University Relations Program).

The committee has already met and Wadsworth hopes to complete the screening process as expeditiously as possible.